DOCUMENT RESUME

ED 390 384 IR 017 604

AUTHOR	Holznagel, Donald C.; Graves, Gary M.
TITLE	Distance Education Resource Directory for Northwest Schools.
INSTITUTION	Northwest Regional Educational Lab., Portland, OR, Rural Education Program.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE	Aug 95
CONTRACT	RP91002001
NOTE	62p.
PUB TYPE	Guides - Non-Classroom Use (055) -- Reference Materials - Directories/Catalogs (132)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Cable Television; Costs; *Curriculum Development; *Distance Education; Educational Planning; Educational Resources; *Educational Technology; Educational Television; Elementary Secondary Education; Interactive Television; Long Range Planning; *Regional Planning; Telecommunications; Teleconferencing
IDENTIFIERS	Satellite Communications for Learning; *United States (Northwest)

ABSTRACT

This directory was developed as a means of addressing the issues of lack of information and inadequate planning assistance which can be a barrier to small schools in preparing for the use of technology for curriculum improvement. For school districts that are considering long-range plans to incorporate distance education technology into the curriculum, this directory can help identify options and their implications and provide up-to-date information about them. Information is geared for northwestern school districts in Alaska, Idaho, Montana, Oregon, and Washington. The directory contains sections on satellite television with two-way audio, satellite television only, broadcast and cable television, computers and telecommunications, and other distance education assistance. Each entry profiles a particular distance education service and typically reports on mode of access, costs, and courses offered. Sometimes a contact person is included and schedules and instructor credentials are provided. There is also a list of distance learning information resources, a list of the services contained within separated cross-referenced according to whether they are full courses or supplementary presentations, sections offering advice on planning and evaluation, including a cost planning worksheet, and a glossary. (BEW)

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THE Northwest Regional Educational Laboratory

TECHNOLOGY PROGRAM

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ED 390 384

DISTANCE EDUCATION RESOURCE DIRECTORY FOR NORTHWEST SCHOOLS

Donald C. Holznagel
Gary M. Graves

August 1995

Northwest Regional Educational Laboratory
101 S.W. Main Street, Suite 500
Portland, Oregon 97204

IR017604

Sponsored by OERI Office of Educational Research and Improvement U.S. Department of Education

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This project has been funded at least in part with federal funds from the U.S. Department of Education under contract number RP91002001. The content of this publication does not necessarily reflect the views or policies of the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.

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INTRODUCTION

Through the periodic regional needs assessments by the Northwest Regional Educational Laboratory (NWREL), many small, rural school districts expressed interest in using technology to assist in solving the problems typical in their schools. Problems identified include lack of subject offerings in critical areas such as foreign languages and advanced math and science, and needs for staff development offerings in a convenient location. The Distance Education and Telecommunications Advisory Committee of the NWREL has recommended the development of this Directory as a means of addressing the issues of lack of information and inadequate planning assistance which can be a barrier to small schools in preparing for the use of technology for curricular improvement.

The Directory has been designed to address two needs. First, there is a need to plan for technology in the curriculum. Many districts are developing long-range plans to ensure that options are examined in the light of curricular needs and that the costs are fully explored and projected. This requires not only identifying options, but also their implications for staff, organization, and other factors.

A second need is for up-to-date information about the options. If a district is considering using distance education technologies, staff will need to identify the available systems, select the options appropriate to their needs, and contact representatives of the organizations providing the service.

The information in this Directory is current as of June 1, 1995. Because the field of telecommunications is constantly changing, and details of course offerings and costs from distance education producers changes at least yearly, a revision will be issued periodically. Information is included here which is most relevant to school districts in the Northwest states of Alaska, Idaho, Montana, Oregon, and Washington. Readers outside the area will find options included which are not available to them, and might in turn have access to services not included here.

For information about services and options within a state, and about laws or regulations regarding staffing, usage, costs or other state-governed issues, please contact the appropriate state representative from the following list. They are all knowledgeable in distance education, telecommunications, computers, and other instructional technologies. For general questions or technical assistance, contact NWREL staff.

Alaska	Lois Stiegemeier	907/465-8724
Idaho	Rich Mincer	208/334-3561
Montana	Scott Buswell	406/444-4326
Oregon	Kathryn Hansen	503/378-8004
Washington	Dennis Small/Cathy Parise	206/753-2574
NWREL	Don Holznagel	503/275-9624
	Seymour Hanfling	503/275-0650
	Gary Graves	503/275-0656

Satellite Television, Two-way Audio

This section describes organizations which produce complete courses or units of instruction in a variety of subjects and levels for students, and staff development courses or teleconferences for teachers. They all use live television delivered by satellite as a presentation medium supplemented by telephone for interaction between students and teachers, commonly called one-way video, two-way audio. Equipment can be acquired locally or through the delivering organization, and includes a satellite antenna, cabling to the classroom, receiving equipment, signal decoder, monitor, and phone line in the receiving classroom. Not all of the services are available in all states in the region. Subjects and topics may vary somewhat from year to year depending on demand, teacher availability, and the priorities of subscribers or governing boards.

Students must be enrolled in a course as they would in a school. Class sizes and process of student-teacher interaction vary, and class sessions are conducted on different patterns of three, four, or five days a week. A local school staff person, called a facilitator or monitor, is required. The person carries out tasks such as registration, attendance, discipline, test supervision, and liaison with the delivering organization. Some states require that the facilitator be a certified teacher, although not in the subject of the course being supervised, while in other states an instructional aide may be used. Schools are expected to have students participate in the live class sessions rather than by viewing videotape. In some cases, computer programs supplement classwork.

ASTS—Arts and Sciences Teleconferencing Service

Oklahoma State University
401 Life Sciences East
Stillwater, OK 74078-0276 Phone: 1-800/452-2787

Access: C-band, Galaxy VI and Ch. 23

Costs:

1-3 students $725 each per course per year
4-10 students $3,000 total for all
Computer software and instructional materials extra

Student Enrichment: $150 per program live, $250 videotape

Courses:

German I, II, and III
AP Physics, AP Calculus
Getting Ready for the PSAT/NMSQT and SAT.
Schedule: Live-course sessions are conducted two or three days per week in the morning, with planned work in computer-based material, audio tapes, print material, or tests on the other days.

Instructors: Professors are selected from the staff of Oklahoma State University.

ESP–Educational Systems Programming/an IDEANET Partner

Educational Systems Programming
Northern Arizona University
P.O. Box 5751
Flagstaff, AZ 86011-5751

Spanish Courses: Lorrie Whorton, Program Coordinator
Phone: (800) 628-6266

Geonauts: Erin Shelly, Program Coordinator
Phone: (800) 628-0687

ESP/NAU Fax: (520) 523-7647

Access: C-band satellite or schools may purchase lessons on videotape. CD-ROM supplemental support available for 1995-96 via Macintosh/PC. Toll-free telephone call-in at scheduled times supports student-teacher interaction. Geonauts will access bulletin boards/databases via Internet. Enroll through IDEANET at (800) 440-4331. Preview videotapes/materials available.

Cost: IDEANET membership; elementary/middle school course are $500 (unlimited enrollment) or $20 per student. Videotapes are $400 or $450 per course per school site. Optional *Student Resource Notebooks* are $8 each.

Courses: The national award-winning Foreign Languages Initiative: Spanish series includes Spanish for Grades 1-2, Grades 3-4, Grades 5-6, and Grades 7-8. Emphasis is on communicative competence and culture. Geonauts, an earth and environmental science course for Grades 4-6, uses Grand Canyon National Park as a living laboratory. For all course: twice weekly lessons run 25-45 minutes; curriculum is essential skills based.

IDEANET–Interactive Distance Education Alliance Network

IDEANET
2121 5th Avenue
Seattle, WA 98121

Phone: (800) 440-4332
Fax: (206) 728-2475

IDEANET is a national distance learning consortium. Partners include Educational Service District 101/STEP/STAR in Spokane, Washington; Missouri School Boards Association; Educational Systems Programming at Northern Arizona University; and Arts and Sciences Teleconferencing Services at Oklahoma State University. Massachusetts Corporation for Educational Telecommunications (MCET) is an associate partner.

Access: C-band satellite, cable, and fiber optics. Interactivity varies per course, using toll-free phone lines, computers, and CD-ROMs.

Cost: IDEANET membership is $2,950 per district which includes one school site. Additional district sites are $150 each. Elementary and middle school courses range from $20 per student to $500 per site per course. High school fees are $175-490 per student per course.

Courses: More than 25 K-12 courses including foreign languages, AP courses, sciences, computers, and arts and humanities. More than 100 hours of enrichment programming and more than 200 hours of teacher inservice. Benefits include access to on-line services (Postlink and SATLINK On-line) and publications (Education SATLINK and IDEANET newsletter).

IREDS SatNet

Rich Mincer
Idaho State Department of Education
Len B. Jordan Office Building
Boise, ID 83720 Phone: 208/334-3561

Access: Any school in Idaho can have access. The system is a network of satellite downlinks at over 100 schools across Idaho and several cable companies. The Idaho Cable Television Association has assisted in the distribution over local access cable. Through TCI, programming is distributed on local access channels in six large population centers in the state. Programs are available on Telstar 302 (T2), channel 22. (There is a possibility of moving to satellite F1 next year.) Schools outside Idaho which can access the signal may use the programming, but the content is specific to Idaho needs and context.

Costs: There are no subscription or usage fees.

Courses: Programming is primarily inservice training for teachers and school administrators. A wide variety of topics is addressed, including the use of technology, specific systems such as Learning Link, curricular methods in reading and math, early childhood education, education legislation, and others. Offerings may expand next year.

LiveNet

Dr. Carl O. Ellis
Associate Dean
College of Community and Continuing Education
University of Alaska—Anchorage
Building K, Room 122
3211 Providence Drive
Anchorage, AK 99508 Phone: 907/786-1379

Access: Contact Dr. Ellis. The service is designed to present courses for CEU, Carnegie, or university credit. Broadcasts are by low-power satellite to South Central and Southeast Alaska, primarily to military bases. A special arrangement has been made for the North Slope Borough School District to use the system for its secondary instruction.

Costs: Contact Dr. Ellis. All applications on the system are self-supporting.

Courses: Several departments of UAA present degree programs. Staff development courses of the State Department of Education will be available, and courses leading to certain master's degrees in Education such as Special Education. The North Slope Borough School District is using the system to send high school math courses to ten sites in the district. Access must be negotiated with Dr. Ellis.

MCET

Therese Perreault, Director of Marketing
MCET
One Kendall Square, Building 1500 Phone: 617/252-5700
Cambridge, MA 02139 FAX: 617/252-5709

MCET, the Massachusetts Corporation for Educational Telecommunications, provides academic modules and staff development K-12 in all subject areas to member school districts within the state. It also provides those services by contract to out-of-state schools and school districts, including those in the Northwest region. Write or phone for programming and membership information.

Pacific Star Schools Partnership

Dr. Nancy McKay
Manager, Telecommunications Division
ESD 101/Star Schools
East 4022 Broadway
Spokane, WA 99202

Dr. Ted Roscher
Director, Star Schools/Marketing
ESD 101/Star Schools
East 4022 Broadway
Spokane, WA 99202

Phone: (800) 754-1486

State Governance Board and Coordinators:

AK:	Lois Stiegemeier or Donna Ostrowski-Cooley	907/465-8724
HI:	John Kofel	808/533-6000
ID:	Rich Mincer	208/334-3561
MT:	Steve Meredith	406/444-3563
OR:	Wayne Neuberger or Kathryn Hansen	503/378-8004
WA:	Gary Gorland	360/586-2053
Ex Officio members:		
Brian Talbott, Superintendent, ESD 101, Spokane, WA		509/456-6320
Dennis Bracey, RXL/Pulitzer Communications		206/728-2478

Access: C-band satellite, Satcom C1. For channel information, please contact representative from ES 101 at (800) 754-1486. Courses are televised live implementing one way video and two way audio. Access to special computer equipment for data transmission is also available. Contact your state representative for application information

Costs: Educational Service District 101 uses support by a Star Schools grant to assist with some of the programming services. Additional membership and student fees are required where appropriate. Please see Satellite Telecommunications Educational Programming for costs.

Courses: Course include *Project Earth, Technology, Ecology & You*, an environmental science course, *Workplace Basics: Preparation for Work*, a school to work high school course, and *Young Astronauts* for grades 4-6. Courses are designed by the Partnership, and produced and transmitted by Educational Service District 101's STEP network (see description below).

SERC—Satellite Educational Resources Consortium

Gary Vance
Executive Director
SERC
P.O. Box 50008
Columbia, SC 29250

Phone: 803/252-2782
FAX: 803/252-5320

SERC courses are live, interactive, satellite-delivered instruction with additional interactivity provided through telephone voice contact and computer networking. Both student for-credit courses, middle-school courses and teacher staff development and graduate courses are available. Consortium members are state education agencies and public television networks in 21 states ranging from California to Florida. No states or other agencies in the Northwest region are members at this time; there are no local districts in the region.

Costs: States may be either full or associate members at costs ranging from $10,000 to $35,000. Tuition fees are $490 per student for language courses and $420 for other courses. Students in nonmembers states are eligible to enroll at an increased fee of $650 per course, per year.

Courses: Courses are produced by participating state networks. Courses include Japanese (NE ETV); Russian, Micro-Macro Economics (SCETV); Spanish II (ND PPB); Latin, German I, Physics, Probability and Statistics (KET); Calculus (MS); and Integrated Science for grades 6, 7, 8 (University of AL).

STEP—Satellite Telecommunications Educational Programming

Dr. Nancy McKay
Manager, Telecommunications Division
ESD 101
East 4022 Broadway
Spokane, WA 99202

Dr. Ted Roscher
Director, Star Schools/Marketing
ESD 101
East 4022 Broadway
Spokane, WA 99202

Phone: (800) 754-1486

Access: C-band satellite, Satcom C1. For channel information, please contact representative from ESD 101 at (800) 754-1486. Courses are televised live implementing one-way video and two-way audio.

Costs:

Membership:	$2,950 (One site fee included)
Additional sites:	$150
Secondary Courses:	
1-7 Students	$490 per student
More than 7	$175 for each student after seventh student
Elementary Courses:	$20 per student per site per course level, or $500 per site per course level unlimited enrollment
Workplace Basics, Preparation for Work:	$275 per student, or $2,500 per district with up to 100 students, or $3,200 per district with 101-200 students, or $3,900 per district with more than 201 students
Inservice:	$750 (1-10 certified staff in district) $1,250 (11-25 certified staff in district) $1,750 (26-50 certified staff in district) $2,750 (51-100 certified staff in district) $3,750 (101-150 certified staff in district) $4,750 (151-200 certified staff in district) $5,750 (201 or more certified staff in district)
Enrichment:	Included within membership fee

Courses: Advanced Placement English, Japanese I and II and Spanish I and II. Over 150 hours of inservice programs and 100 hours of enrichment programs are provided throughout the school year. Please see Pacific Northwest Educational Telecommunications Partnership.

Schedule: Live class sessions are conducted throughout the week. Classes generally are aired four days a week, with the fifth day reserved for testing and other activities. Please contact a representative at (800) 754-1486 for 1995-96 course, inservice, and enrichment schedule.

Instructors: Certified in the State of Washington and certified or approved in those states having participating schools.

TI-IN Network Inc.

Corporate Office:

TI-IN Network, a division of Westcott Communications, Inc.
1303 Marsh Lane
Carrollton, TX 75006 Phone: 800/999-8446

Representatives for Alaska, Oregon, Montana, Idaho, Washington:

AK:	Ashley Lassen	800/999-8446, ext. 5441
ID:		800/999-8446, ext.
MT:	Greg Anderson	800/999-8446, ext. 5398
OR:	Elaine Kelly	800/999-8446, ext. 5428
WA:	Greg Kendall	800/999-8446, ext. 5570

Access:

Compressed Digital Video
Ku-band satellite
Receive equipment provided to subscribing schools at no cost

Costs:

Annual Support and Service (high school)	$4,250
Elementary School	$2,000 (includes two courses and unlimited enrollment)
Per Student per course per semester	$290
Elementary courses	$500 each/unlimited enrollment
Elementary and secondary enrichment	No Charge
Staff development	Included in support and service fee

Courses:

French, German, Spanish, Latin, Japanese
Physics, Astronomy, Marine Science, Anatomy and Physiology, Elementary Spanish, Middle School Language Survey (Latin, French, Spanish, Japanese, Chinese, and German)
Calculus, Literature, Beginning ESL, Beginning Elementary Spanish, Middle School Spanish
Environmental Science, Middle School Math, and Science Modules
Psychology, Sociology
(Advanced Placement credit options for Physics, Calculus, Psychology, and Literature)
Staff development programs are offered in over 20 topics in a school year.

Schedule: Live sessions are conducted five days a week between 5:00 a.m. and 2:00 p.m., Pacific time, including secondary, elementary, and enrichment. Staff development is conducted mainly between 1:00 p.m. and 5:00 p.m., Pacific time. Enrichment programs are 25-minute sessions conducted once and targeted at a variety of grade levels. The 1994-95 school year is August 24, 1994 to May 26, 1995.

Instructors: TI-IN employs experienced teachers who are certified, usually in many states.

Triad Project

Ms. Ann McLean
Puget Sound ESD
12320 80th Avenue South
Seattle, WA 98178 Phone: 206/439-6913

Access: Access is available to all school districts in Washington state. Access for schools outside the state is not available now, but future access through the Pacific Northwest Educational Telecommunications Consortium is a possibility. Satellite access information is available from the above office.

Costs: Districts may become members of the Triad Project at a cost of $600.00 for districts having less than 100 teachers, and $900.00 for those having more than 100 teachers.

Courses: Programs are currently for staff development purposes, addressing a variety of topics, and are produced quarterly. Program topics for 1994-95 were not available at the time of this printing, and may be obtained from the above office. Three or four programs are produced per year through the cooperation of the Washington Office of the Superintendent of Public Instruction and the Puget Sound ESD.

NASA—National Aeronautics and Space Administration

Satellite Videoconferences

A series of educational programs for teachers in aeronautics and space science topics is provided each school year. The conferences include an interactive component for viewer questions and discussion.

Videoconference Coordinator
NASA Aerospace Education Services
Oklahoma State University
300 N. Cordell
Stillwater, OK 74078 Phone: 405/744-7015

Satellite Television Only

The following services provide one-way television programming by satellite, with no interaction between receiver and sender. They do not provide full instruction in courses, but offer a variety of material which can be used by teachers to supplement and enrich regular courses in several ways. The television equipment required in the school is the same as for the services in the previous section, but no phone line is needed.

CARTOON NETWORK Educational Programs

¡Es Increible¡ is a commercial-free cartoon program in Spanish designed as a teaching tool for educators to help students learn Spanish. The program is accompanied by a multi-level classroom guide, which can be adapted for beginner, intermediate, and advanced Spanish students. *¡Es Increible¡* airs the last Friday of every month at 1:00 a.m. (ET) on the Cartoon Network.

Turner Educational Services, Inc.
One CNN Center
Box 105366
Atlanta, GA 30348-5366 Phone: 1-800/344-6219

Just Yabba-Dabba-Doo It! is a commercial-free cartoon program designed to help educators teach students social skills, language arts, literature, science, drama, art, and social studies. The monthly cablecast is supported by curriculum materials written by educators and mailed each month to enrolled educators prior to taping. *Just Yabba-Dabba-Doo It!* airs the last Wednesday of every month at 1:00 a.m. (ET) on the Cartoon Network.

Turner Educational Services, Inc.
One CNN Center
Box 105366
Atlanta, GA 30348-5366 Phone: 1-800/344-6219

Channel One

Whittle Communications, through its Whittle Educational Network, provides Channel One, a daily 12-minute television news program designed especially for schools and delivered by satellite. In order to receive the program, a school is given the required satellite dish and other video equipment free of charge. Each program contains four 30-second commercials. The Network also offers The Educators' Channel to provide staff development, and The Classroom Channel to provide instructional enrichment programming.

Customer Service
Whittle Educational Network
333 Main Street
Knoxville, TN 37902 Phone: 1-800/445-2619

CNN Newsroom

CNN NEWSROOM is a fifteen-minute, commercial-free, cable or satellite delivered news program offered free of charge to schools. The program airs each weekday at 3:45 AM (ET) on CNN, providing schools with the most up-to-the-minute news coverage from around the world. The Program is copyright free and can be taped and used anytime in the curriculum. A daily classroom guide is available through a variety of electronic mail services including America Online and various state educational networks.

Turner Educational Services, Inc.
One CNN Center
Box 105366
Atlanta, GA 30348-5366 Phone: 1-800/344-6219

NASA Select

NASA Select is the NASA television service. In addition to live coverage of space missions, informational and educational programming on space and related topics is provided including historical documentaries and new scientific information from continuing projects. Programming will occur in four-hour blocks starting at 9:00 a.m. Pacific time, Monday through Friday, repeated at 1:00 p.m., 5:00 p.m., and 9:00 p.m. Transmission is on SatCom F2R, C-band, transponder 13, 72 deg. W., frequency 3954.5 MHz, Audio 6.8 MHz.

Director, NASA Select
c/o Deputy Associate Administrator for Public Affairs
Code P
NASA Headquarters
Washington, DC 20546

NOAA—National Oceanographic and Atmospheric Administration

A variety of informational publications regarding the use of data from various federal centers is available to teachers. A free computer bulletin board service is available which contains several categories of information about satellite data. The Direct Readout Service provides direct access to transmissions from weather satellites.

NOAA Educational Affairs Office Phone: 301/713-1208
Silver Spring Metro Center #4
Room 8624
Silver Spring, MD 20910

SCOLA

The SCOLA organization provides access by satellite to native language television news programs live or by tape delay. Programs are available from over 30 countries. English translation is also provided. Their OutWrite service provides instructional support materials. Inservice workshops are also offered about once a month.

SCOLA
P.O. Box 619 Phone: 712/566-2202
McClelland, IA 51548-0619 FAX: 712/566-2502

TESI—Turner Educational Services, Inc

Turner Adventure Learning is a series of live, interactive field trips designed to connect students to real-time, real-life, real-learning experiences via cable or satellite. During Turner Adventure Learning events, students may interact via telephones and computers with experts and historians on site, and even with each other, to gain access to information not typically found in textbooks. Each event combines a live event with interactive publishing and voice and video inter-connects as well as a variety of teaching tools that allow teachers to met the needs of their curriculum. Prior to each event, Turner Educational Services, Inc. (ESI) will provide educators with a teacher training tape and a teacher's resource book to help guide them through the use of the new technology. TESI also offers diverse on-line resources and a toll-free hot line for questions and technical assistance. For a list of the upcoming Turner Adventure Learning destinations, or to enroll, educators can call:

Turner Educational Services, Inc.
One CNN Center
Box 105366
Atlanta, GA 30348-5366 Phone: 1-800/344-6219

Broadcast and Cable Television

The services in this section require only standard television receiving systems in the school. No satellite antenna is needed, and in the case of PBS courses, no phone line is required. PBS courses do not have a live interactive component, and therefore may be as easily viewed on videotape as by broadcast.

PBS—Public Broadcasting Service

General information:

Please first consult the Education Services Director of your local PBS station. For the name and phone number of your Education Director, contact:

Thomas J. Flavell
Marketing Associate
K-12 Learning Services
Public Broadcasting Service
1320 Braddock Place
Alexandria, VA 22314

Phone: 703/739-5402
FAX: 703/739-8495
E-mail: k12@pbs.org

PBS K-12 Learning Services is the school television arm of PBS dedicated to serving instructional needs of students and teachers nationwide, through and on behalf of public television station and related education agencies. In addition to distributing instructional programming and related curricular materials for K-12 classroom use, it facilitates the use of PBS prime-time and children's programming as curricular resources; and supports the station and school use of other PBS Learning Services including *Mathline*, PBS ONLINE, PBS *Learning Link* and PTV, the *Ready to Learn Service* on PBS.

Videoconferences:

Francis Thompson or Tom Flavell

Phone: 703/739-5402
FAX: 703/739-8495
E-mail: k12@pbs.org

Access: The PBS K-12 Learning Services provides instructional programming to PBS affiliate stations or state PBS affiliate organizations. Contact your local station or state public broadcasting agency for offerings and schedule. Oregon Public Broadcasting provides a video library arrangement in which all educational programs for classroom use are broadcast between 5:00 and 7:00 a.m. daily specifically for taping by Oregon schools. KCTS-Seattle provides programs to K-12 schools by daily broadcast and video library, teacher inservice, and the PBS *Learning Link* service.

Costs: Varied, but sometimes free to schools if license fees are paid by the station or other sponsor. Videoconference costs are usually passed on to participants in the form of a registration fee.

Courses: Programming is of three types: full courses, instructional supplements, and staff development videoconferences. Full courses in foreign languages, math, and science are developed by the Annenberg/CPB project. Instructional supplements are individual programs or short series intended for classroom use. Staff development videoconferences are single sessions or series developed in conjunction with educational organizations such as ASCD and NCREL, which incorporate periods of live interaction between panelists and viewers.

Schedule: Varied. Contact your local station or state PBS agency. Statewide agencies are:

Idaho Educational Public Broadcasting System	Jerry Garber	208/385-3727
Oregon Public Broadcasting	Steve Johnson	503/293-1909

Cable in the Classroom

General information:

Cable in the Classroom
1900 North Beauregard Street
Suite 108
Alexandria, VA 22311 Phone: 703/845-1400

Access: Through your local cable company. Member channels include A&E, BET, Bravo, C-SPAN, CNBC, CNN, Court TV, The Discovery Channel, ESPN, The Family Channel, The Learning Channel, Lifetime, Mind Extension University, MTV, Nickelodeon, PBS, Sci-Fi Channel, Sports Channel, VISN, The Weather Channel, WGN, and X*PRESS.

Cost: There is no cost for the programming. Member cable companies currently provide a free cable connection for secondary schools. Some instructional support materials are available free of charge; some channels provide materials at a minimal cost.

Courses: All programming is supplementary instructional material except for courses available on Mind Extension University. Many member channels provide classroom kits and study guides to assist teachers in classroom use of the programming. (See *Cable in the Classroom* magazine for contact references.) The organization has arranged with its member channels for blocks of commercial-free educational programming (over 500 hours monthly) which occurs in regular time periods and have liberal copyright clearances.

Computers, Telecommunications

Services presented in this section rely on computers, modems, telecommunications software, phone lines, and electronic mail systems to provide a variety of services, including full-course individualized instruction, organized student group interaction, student-mentor communication, and special bulletin boards or databases. The school site is required to have a phone line in addition to the computer equipment, but no satellite antenna or other television equipment. Ongoing costs include telephone line charges and in some cases subscription fees.

The full course options require student registration and assume completion in a standard time period such as a semester. The organized supplementary instruction options also require registration and the activities are expected to take place within a specified period.

Complete Courses

ACS—Alyeska Central School

"Alaska's Centralized Correspondence School"
Alaska Department of Education
3141 Channel Drive, No. 100
Juneau, AK 99801-7899 Phone: 907/465-2835

Access: Enrollment is by individual student, although a group of students in a school may take the same course at the same time. Enrollment is available only to Alaska residents. Course materials are sent by regular mail. Courses are being rewritten to incorporate a variety of information technology including calculators, videos, tool software, and telecommunications. Periodic telephone conference calls are used during one course.

Costs: There is no cost to individual Alaska residents. Charges are made for course materials when districts purchase courses.

Courses: A full range of courses in the Alaska secondary and elementary curriculum is available, including sciences, mathematics, social studies, language arts, and others.

Schedule: Students are enrolled on a semester or school year basis and are expected to complete a course within a standard period of time.

Instructors: Certified teachers are employed in ACS to develop courses and act as the teachers of courses in progress, receiving student work and tests and providing guidance.

EDUNET

EDUNET
P.O. Box 298
Saco, MT 59261

Phone: 406/527-3531
Computer phone: 406/527-3521

Access: The system is based on electronic mail and file transfer. The receiving site needs a microcomputer with printer, modem, and a telecommunications software package, and uses ordinary phone lines to reach the central computer. The computer system is "open-access." By connecting with the above computer phone number a new user may select a personal password, answer a few questions, and immediately become part of the system.

Costs: $250 per student per course per semester, staff development same rate. Cost of long distance calls not included.

Courses: Approximately 68 courses are available, representing a wide range of curricular areas including math, science, foreign languages, business, and others. Courses are designed as individualized instruction. Student instructions and course materials are stored in computer files which are downloaded to the school microcomputer when requested. Student-teacher interaction is primarily by electronic mail, although telephone conversations can take place when teachers are available.

Schedule: Courses generally follow the school calendar (18-20 week semesters). Courses are designed for individualized, self-paced instruction, although completion is expected to coincide with the end of the school semester. Course offerings in a given semester depend on the demand and available teachers.

Instructors: Teachers certified in the subject area of the course are allowed to design, develop, and teach a course. A course may be taught by a teacher who did not develop the course. Development consists of the design of lessons and development or selection of instructional materials. Teaching consists of guiding students through the completion of a course, checking and grading work, and responding to student questions and discussion.

Supplementary Instruction

AT&T Learning Network

The AT&T Learning Network is a curriculum-based telecommunications service which provides team-based collaborative project development for students and their distant peers. Classes of geographic, cultural, and social diversity are linked together to share ideas, projects, histories, cultures, and perspectives. Fees range from $195 to $375 per session depending on length, and include instructional materials and telecommunications software.

AT&T Learning Network
P.O. Box 6391
Parsippany, NJ 07054 Phone: 1-800/367-7225, ext. 4158

NASA Telelectures

The Virginia Air and Space Center supplies a live audio lecture and discussion by telephone supported by 35mm slides at the receiving site. After a reservation is made, a carousel is sent to the local sponsor (school or organization) to be shown in combination with the live phone presentation. Eleven programs, relating to NASA topics in aerospace research, are available. Adherence to a precise schedule is important at the receiving site. A nominal charge will be assessed to cover the Center's program expenses.

Telelecture Programs Reservations
Virginia Air and Space Center
600 Settlers Landing Road Phone: 804/727-0900, ext. 780
Hampton, VA 23669-4033 FAX: 804/727-0898

NGS Kids Network

The National Geographic Society offers this program to provide elementary and middle school student research activities organized around topics in science and social studies. Seven eight-week units are available. Students engage in local research, then compare data, hypotheses, and conclusions with students in other parts of the country and other countries who are involved in the same investigation at the same time. Materials are $325 to $375 per unit, plus $115 for tuition and telecommunications. Available for Apple IIGS, Macintosh, and IBM computers.

National Geographic Society
Educational Services
Washington, D.C. 20036 Phone: 1-800/368-2728

WorldClassroom

WorldClassroom is an international curriculum and information network for K-12 schools worldwide. Classes are linked with their peers from distant locations and work on structured curriculum activities in science, social studies, language arts, foreign languages, and current events. Students get involved in data sharing, problem-solving, and writing activities. In addition to these activities, Guest Speakers are on-line to discuss topics of interest to teachers and students alike. A subscription fee is a site license that gives the school access to all on-line activities and all other subscribing schools worldwide. WorldClassroom is available via the Internet as well as toll-free and local access numbers. Costs vary from $195 to $595 based on type of access and length of subscription.

Global Learning Corporation
P.O. Box 201361
Arlington, TX 76006

Phone: 1-800/866-4452
FAX: 1-817/460-5483
E-mail: global@glc.dallas.tx.us

Regional Telecommunications

Educational Telecommunications Services in the Northwest Region

This is a summary of the data and video networks and resources for K-12 education in the five northwest states, most of them operated by states or other public entities. The situation in all states is constantly changing because of rapid technological development, increasing commercial activity, and new legislation. For current information, call the Technology Program, Northwest Regional Educational Laboratory, 503/275-9500.

Regionwide Systems

For Internet connectivity, two regional non-profit Internet providers are the primary source for the region. NorthWestNet is the primary provider of access to Alaska, Idaho, Montana, Oregon, and Washington, and West Net provides service to Idaho. Commercial providers are becoming established in the region as well, including Sprint and Micron Internet Services. Many teachers are obtaining their own accounts through such companies as America On-Line and Teleport as an interim means of access and exploration while district plans are in the development stage.

Regional coverage in satellite television for distance education is provided primarily by Education Service District (ESD) 101 and its service contractor, RXL Communications, both in Spokane, Washington. ESD101 is the provider of technical support for the Pacific Star Schools Consortium in which five of the six states are partners, and is the host agency for STEP, Satellite Telecommunications Educational Program, which provides distance learning services nationwide. The Star Schools project serves 469 receiving sites in the five states ranging from 23 in Montana to 168 in Alaska.

Alaska

Internet services are provided by the University of Alaska Computer Network (UACN) through NorthWestNet. The Alaska Department of Education subsidized connectivity of school districts to UACN in 1994-95, with districts also paying a large share of their costs. The Department has developed a Gopher server. Planning for the future includes continued development and use of the UACN service, and the development of additional Internet-based information services by the Department of Education.

Idaho

IdahoLink, a Learning Link bulletin board system operated by Idaho Educational and Public Broadcasting System, continues to be a primary system for teachers and administrators. It provides dial-up access for all users, with a special 800 number for teachers making usage free to them. It provides in-state bulletin boards and discussion groups, and an Internet gateway for e-mail and Gopher.

Micron Internet Services was formed by Micron Technologies to market Internet services to communities across the state. Their plan, encouraged by educators and legislators, is to bring low cost access to schools by placing the community point of presence in a school facility, and paying for it through sales to businesses or other organizations. This plan might replace the IdahoLink over a period of two or three years.

The State Legislature has appropriated over $10 million per year for 1994-96 for school district grants for technology and related inservice. A number of districts are planning to obtain their own direct Internet connection with their funds.

A major provider of televised distance learning and teleconference services is the Simplot /Micron Center of Boise State University. The Center has provided distance learning courses to Idaho schools in collaboration with the Idaho Department of Education. It can provide such services to other organizations on a contractual basis, and can link with other such providers in the region such as ESD 101 in Washington.

Montana

The statewide system METNET is operated by the Department of Education, providing e-mail, bulletin boards, and discussion groups, using the First Class bulletin board software. An 800 number supports free access, but lack of funds after February, 1995 forced the Department to terminate line. They will reinstate the free access plan at the beginning of the 1996 fiscal year. There is an Internet gateway for e-mail and Gopher, and METNET staff are developing custom interfaces for K-12 users.

Big Sky Telegraph, operated by the University of Montana at Dillon, provides dial-up service to reach many rural small schools across the state and outside the region as well. Subscribers have access to Internet e-mail and Gopher, and curricular discussion groups and databases of instructional resources are maintained. It is the support system for an Annenberg Rural Education project which will reach rural educators in four states in the 1996 school year.

A statewide two-way videoconferencing system of seven sites is managed by the Department of Administration, and is available to districts and other educational organizations for an hourly fee. There are 300 satellite receiving sites in educational institutions for METNET one-way televised distance learning. The two systems can be used together, uplinking the primary feed from the two-way video system.

Oregon

The Oregon Department of Education has planned the Oregon Public Education Network (OPEN) as the statewide Internet-based network for K-12 education. The OPEN plan is based on two major nodes, already implemented by the Department of Education, and both connected to NorthWestNet. The Oregon Association of ESDs (OAESD) is now assuming responsibility for the completion of the plan, with all ESDs connecting to the two nodes, and all districts connecting to their ESD. Six ESDs, a large number of districts within them, and the Portland School District have implemented their connections. Many others are planning for a connection by September, 1995.

Oregon EdNet is a non-profit quasi-governmental organization which provides three levels of telecommunications services to education, government, and public or private social service organizations. Network I provides one-way video distance education courses and conferences produced by the Department of Education, higher education institutions, state government agencies, and private companies and organizations. There are 240 receiving sites in the state. Network II provides two-way video teleconferencing to 37 sites. Networks I and II are both available by contract. Network III is the Compass bulletin board system, using First Class software, with 21 dial-up points around the state. Users pay a fee of $40 per year for an in-state e-mail account, and $75 per year for an account having access to Internet e-mail and selected Gopher services. Many teachers are using Compass and paying the account fees themselves as a means of learning about the Internet and collegial interaction and support.

Washington

The statewide network plan establishes the ten ESDs as the focal points for both Internet connectivity and video teleconferences. As in Oregon, most schools and districts will connect to their ESD for Internet service, although some large districts are arranging their own direct Internet connection.. The ESDs are connected to the Internet through T-1 lines to WEdNet, the Washington Educational Network, which maintains a contract for Internet access aggregation. Gopher and WWW servers operated by the Office of the Superintendent of Public Instruction (OSPI) are active on WEdNet. Every ESD has an Internet host computer, and some are establishing their own Gopher and WWW servers, as all will eventually do. Several on-line discussion groups are very active, and the OSPI supports eight statewide on-line curriculum projects.

The state also operates a network of two-way videoconferencing sites, one at each ESD and the OSPI, the cost of which is partially deferred by hourly usage charges.

NorthWestNet

NorthWestNet is a not-for-profit consortium that deploys and operates a regional computing and digital communications network serving the six states of Alaska, Idaho, Montana, North Dakota, Oregon, and Washington. NorthWestNet is a regional component of the National Science Foundation Network (NSFNET) and the worldwide Internet serving universities, colleges, primary and secondary educational institutions, libraries, government laboratories and research facilities, state and local government agencies, not-for-profit organizations, and industry. NorthWestNet is funded by member dues, service fees, and National Science Foundation grants.

NorthWestNet provides as services to its members a Network Operations Center, turn-key installation service, technical consulting services, network equipment and software maintenance service, training program and materials, on-line and published documentation (*The Internet Passport*); the *NodeNews* quarterly newsletter; Domain Name Service; Usenet news feeds; shared access to licensed, for-fee information services; network host services (e-mail, telnet, ftp, WAIS, gopher, etc.); conferences and sponsored seminars; and grants and contracts administration,

NorthWestNet is operated as a not-for-profit consortium owned and governed by its members. Each NorthWestNet member site is invited to participate in this effort through representative committees and advisory boards focusing on three areas of service: administrative, technical, and user services. This focus upon community involvement and governance allows NorthWestNet to achieve its mission of promoting research, education, and economic development in the Northwest through shared technology and information resources.

NorthWestNet
15400 SE 30th Place, Suite 202
Bellevue, WA 98007

Phone: 206/562-3000
FAX: 206/ 562-4822
E-mail: info@nwnet.net

Databases, Bulletin Boards, and Networks

Big Sky Telegraph

Big Sky Telegraph (BST) is an educationally-focused community network supportive of K-100 lifelong learning. BST offers free access and free on-line lessons to anyone, anywhere, anytime, showcasing highest value resources from the Internet. BST will customize its services to support grassroots innovations and projects initiated by its members. Resource-sharing partnerships are continuously invited. Internet mail accounts are available for $50 per year. Full Internet services will soon be available. BST's "Reach for the Sky" science and math telecomputing project is funded by the Annenberg/CPB Science and Math project and the US West Foundation.

Frank Odasz
Big Sky Telegraph
Western Montana College
710 S. Atlantic
Dillon, MT 59725

Phone: 406/683-7338
FAX: 406/683-7493
Computer: 406/683-7680
E-mail: franko@bigsky.dillon.mt.us

Computer PALS Across the World

A global sharing electronic network which aims to familiarize students and community institutions in the use of worldwide communications (including fax, photo-telephone, tele/video conferencing, electronic mail and other electronic communications). Coordinated by primary through tertiary educator volunteers, the network operates through existing systems (Internet, Internet-accessed services, Campus 2000, etc.). Current project include: visiting professor, environment, language arts, school matches, and conferencing.

Membership fees vary with the country and services provided with on-line charges dependent upon system used and group availability.

Virginia Warner, USA Director
Computer Pals Across the World, Inc.
P.O. Box 2332
Carson City, NV 89702

Phone: 702/885-1907
FAX: 702/885-1907
E-mail: vwarner@unr.edu
vrwcpaw1@aol.com

FrEdMail

FrEdMail is a network composed of many local electronic mail and bulletin board systems which operate independently during the day and transfer files between sites at night. The major goal is to motivate writing and communication skills. Students may do their writing off-line, and the collected writings of a group may be shared with another group in another part of the country by transmitting batches at night. Participating through an existing local node is free. There is a cost of $149 for the software to establish a local system to serve up to 200 users and $199 annual FrEdMail Consortium subscription fee. The newsletter has an annual subscription fee of $10, and handbooks and training materials are available at low cost.

FrEdMail Foundation
Box 243
Bonita, CA 91908-0243 Phone: 619/475-4852

K12 Net

K12Net: the grassroots school network with "training wheels!"
K12Net is a cooperative network of approximately 600 autonomous school-based or -oriented FIDOnet BBS's throughout the world as well as a similar number of Internet-based USEnet sites. There are, for example, nearly 100 K12Net BBS's in New Zealand alone. They all share three dozen common conferences directly relating to
K-12 curriculum areas and classroom projects. A message written in any of these conferences is "echoed" to all of the other K12Net sites around the world where teachers, students or parents may read and respond to them. Access is open to the public, is free of charge and there are no network affiliation fees of any kind. Schools wishing to set up their own K12Net BBS will find start-up costs to be remarkably low and technical assistance from the FIDOnet community readily available.

Information contacts:
Jack C. Crawford, Jr.

Wayne-Finger Lakes Teacher Resource Center	Phone:	315/331-1584
	Fax:	315/331-1587
703 E. Maple, 10 Eisenhower Hall	FIDOnet:	1:260/620
Newark, NY 14513-1863	E-mail:	jack@rochgte.fidonet.org

OR

Janet Murray		
Wilson High School	Phone:	503/280-5280, Ext. 450
1151 S.W. 25th Avenue	FIDOnet:	1:105/23
Portland, OR 97219	E-mail:	jmurray@peg.com

LabNet2: The High School Science Teachers' Network

Building on the original three-year project, LabNet2 is committed to supporting the spread of project-enhanced science learning (PESL) by helping teachers to create learning environments in which students can experience the excitement of the working scientist. Central to this effort is the nationwide telecommunication LabNetwork which facilitates teacher support and the exchange of ideas. Over the next several years, LabNet2 will expand this network, adding 1,350 high school science teachers. Applications are currently being accepted; for more information, write or call the address below. The LabNet project is administered by TERC, a nonprofit education research and development organization, and is funded by the National Science Foundation.

LabNet2
TERC
2067 Massachusetts Avenue
Cambridge, MA 02140 Phone: 617/547-0430

NASA Spacelink

NASA Spacelink is a computer information system for teachers and students. The Spacelink database includes current news about NASA missions and programs as well as information resources about NASA programs in aeronautics, space exploration, space flight, and Mission to Planet Earth. Information about NASA education services, classroom materials, and software is also included. Spacelink is available via modem at 205/895-0028 or through the Internet at spacelink.msfc.nasa.gov.

Additional information may be obtained from:

NASA Spacelink System Administrator
Educational Programs Office
Marshall Space Flight Center
Mail Code CL01
Huntsville, AL 35812

Phone: 205/544-6360
Direct Dial
Modem: 205/895-0028
TCP/IP: 192.149.89.61
WWW: http://spacelink.msfc.nasa.gov
Gopher/FTP: spacelink.msfc.nasa.gov

NOAA—National Oceanographic and Atmospheric Administration

A variety of informational publications regarding the use of data from various federal centers is available to teachers. A free computer bulletin board service is available which contains several categories of information about satellite data. The Direct Readout Service provides direct access to transmissions from weather satellites.

NOAA Educational Affairs Office
Suitland & Silver Hill Roads, Rm. 0158
Suitland, MD 20746

Phone: 301/763-4690
NOAA.SAT Bulletin Board:
1-800/546-1000

Ostendorf On-Line

This is a service of the publisher of *At A Distance* described in a later section. It is an on-line database of distance education program scheduling which is updated daily, and is designed to supplement the printed catalogs with highly current information. It is provided through the Learning Link and Intro Link systems described in this section. Special arrangements for access at reduced rates have been provided to schools in the Northwest states because of a joint development effort. Contact your state technology coordinator for details of access in your state.

PSInet

The People Sharing Information Network (PSInet) is the name of software designed for conducting conferences by telecommunications using IBM-compatible microcomputers. A network host system may be established by anyone. Participants at each station can do most of their work off-line, and files are sent to and received from the host system (also a microcomputer) in batches for speed and economy. In addition to messages between members, the system handles sessions and papers in a conference format. Messages and conferences may also be exchanged between PSInet networks. Standard telephone service is used for all connections. Major groups of users have been formed by the National Education Association and the Council of State Science Supervisors. Many science supervisors are forming teacher networks within their states. Software for either a host station or a user work station may be purchased from IBM Corporation.

For further information, contact the IBM Educational Representative for your area. Science teachers should also contact their state science supervisor.

Xchange™

Ingenius™, formerly X•PRESS Information Services, Inc., provides Xchange™--an information service that delivers up-to-the-minute, unedited global news via cable to personal computers. Xchange™ offers world news, weather, stock quotes entertainment, and more. Cable in the Classroom support materials are available via Xchange™ for ten national cable networks. Ingenius also delivers What on Earth™, a daily multimedia current events learning resource, developed by educators with lesson plans and student activities for a powerful learning experience. With Xchange™ and What On Earth™, students become instant citizens of the world and build valuable vocabulary, reading and cognitive skills.

Education Contact: Linda Farley
Vice President Education

Ingenius™
4 Inverness Court East
Englewood, CO 80112 Phone: 800/7PC-NEWS

OTHER DISTANCE EDUCATION ASSISTANCE

ESN—Education Satellite Network

ESN is a school district service developed and operated by the Missouri School Boards Association. It provides equipment, technical assistance, and programming in a package to assist school districts with access to distance education services from a variety of sources. Outside Missouri, services are provided through an agreement with state school boards associations. In the Northwest, the Idaho and Montana associations have such agreements. Districts in those states may use the following contacts to investigate the service:

Idaho:	Vicki Weber, ISBA	208/342-6411
Montana:	Bob Anderson, MSBA	406/442-2180

ESN charges a membership fee which supports its services, some of which are listed below. They are packaged in various combinations at different cost levels.

Hardware—antenna and related equipment, and in-school video and telephone equipment.

Monthly Program Guide—describes programming and schedules.

Enrichment Programs—ESN licenses viewing and taping rights for programming from a dozen vendors including SCOLA, Classroom Earth, and others.

Inservice—staff development programs and teleconferences are produced by ESN and other agencies.

Instructional Programming—ESN will assist districts in arranging contracts with major course producers such as Oklahoma State University, but does not pay the fees.

State Technology Coordinators

Each of the state education departments in the Northwest has staff who are assigned responsibilities for aspects of distance education and telecommunications, including providing information and assistance to districts. They are the same state representatives listed in the introduction of this booklet.

Private Companies

Frequently, corporations are willing to provide assistance to school districts in areas of their expertise. School district personnel probably know of companies in their local area which have knowledge in telecommunications, such as the telephone, cable television, and broadcast television companies. Described in this section are organizations whose work covers a wide area of the region, and whose staff are available for planning services or other assistance, usually in relation to extending their business.

U. S. West Communications

This company provides telecommunications services in 14 western states, and has a central staff dedicated to planning and marketing distance education systems and services. They are particularly interested in two-way interactive video and audio systems, implemented in a locally controlled system serving one or more districts in an area. The company is working with schools in projects in Minnesota, Arizona, and other states and has supported the annual Montana Distance Learning Conference. The company maintains a foundation to fund research and development activities in the field. Education representatives are in four of the five states in the region:

Idaho:	Phil Ruebel	208/364-3977
Montana:	Michele Burchett	406/441-7603
Oregon:	Tom Atkinson	503/484-7946
Washington, Seattle:	Ezra Robinson	206/224-1162
Washington, Spokane:	David Jessup	509/623-0315

Tele-Communications Inc. (TCI)

TCI cable systems provide free cable installation, programming, teacher support materials, and central location wiring to all participating accredited schools within TCI service areas. Recently, TCI announced a commitment to provide all public and private K-12 schools, located in its service area, a free Basic Educational Connection to the information superhighway. Initially the package will consist of a broadband connection to advanced coaxial/fiber networks being built by the company. Schools will be provided the basic connection to access Internet. The corporation is also sponsoring a Showcase Laboratory School in West Linn, Oregon and has supported the Montana state network.

The regional office and contact person for education is:

Ms. Cindy Eichner
TCI West
2233 112th Ave. N.E.
Bellevue, WA 98004 Phone: 1-206/462-2791

State or local company contacts may be obtained from Ms. Eichner.

INFORMATION RESOURCES

Programs and Production References

The following subscription publications may be useful to educators in the process of selecting instructional opportunities for students and inservice opportunities for teachers through distance education systems. All three provide information on programs, courses, time schedules, and access. They differ in coverage and frequency of issue. The first one addresses several distance education systems including nontelevision options while the second and third deal only with satellite-delivered television options.

At A Distance
Virginia A. Ostendorf, Inc.
P. O. Box 2896
Littleton, CO 80161-2896
$50 per issue, two issues per year.

Satellite Learning Program and Resource Guide
EnterACT Corporation
P. O. Box 409
League City, TX 77574-0409
$87 per year, Spring, Summer, Fall and Winter issues.

Satellite Scholar
The Comprehensive Guide to Distance Learning
2347 South Avenue West
Missoula, MT 59801

$89 per year, issued monthly with expanded preplanning issues; phone 406/549-4860 for a free sample issue.

The following publication is distributed free of cost to schools by many cable companies, although it can also be obtained by subscription if necessary from the address below. It is published monthly during the school year and contains schedule information organized by subject for the full range of educational programming from over 20 *Cable in the Classroom* member channels. The magazine also contains a taping calendar, articles, and instructional planning aids.

Cable in the Classroom Magazine
86 Elm Street
Peterborough, NH 03458 Phone: 800/216-2225
$18.00 per year, or free from cable company

General Information References

The following publications offer information on the range of delivery options, school district plans and examples, issues, problems, and future developments.

The American Journal of Distance Education
The Pennsylvania State University
403 South Allen St., Suite 206
University Park, PA 16801-5202 Phone: 814/863-3764
Subscription: $55.00 per year, 3 issues
Back issues: $15.00 each issue with subscription
$30.00 each issue without subscription

ED, Education at a Distance Magazine and Journal
USDLA
P.O. Box 5129
San Ramon, CA 94583 Phone: 510/606-5160

Interactive Television for Distance Learning: From Plan to Practice
National School Boards Association's Institute for the Transfer of Technology to Education
P.O. Box 161
Annapolis Jct, MD 20701-0161
$12.00 each

Barker, Bruce O. *The Distance Education Handbook: An Administrators Guide for Rural and Remote Schools*
ERIC Clearinghouse on Rural Education and Small Schools
AEL
P.O. Box 1348
Charleston, WV 25325
$10.00 each

Meetings and Conferences

A great deal of general and specific information including progress reports and school district experiences is available at conferences and association meetings. The following list is intended to indicate the opportunities in the Northwest region. Information on dates and costs may be obtained from the responsible organization or state technology representative.

ACPE–Association for Computer Professionals in Education

Meets semi-annually in November and April, in major cities between Eugene and Seattle. Meetings are one day and focus on a specific predetermined topic, usually with an emphasis on administrative applications in education. Telecommunications and networking are often on the agenda.

Arlen Sheldrake
Multnomah ESD
P. O. Box 301039
Portland, OR 97230-9039
Phone: 503/257-1531

ASTE–Alaska Society for Technology in Education

Meets annually for two or three days in April in Anchorage. Sessions cover a wide range of topics on the instructional use of computers, telecommunications, and related technologies.

Lois Stiegemeier
Alaska Department of Education
801 W. 10th Street, Suite 200
Juneau, AK 99801-1894
Phone: 907/465-8724

Montana Telecommunications and Distance Learning Symposium

The Montana Telecommunications and Distance Learning Symposium is held annually in the fall.

For further information contact:

Cynthia Denton
201 Thirda Avenue East
Hobson, MT 59422
Phone: (406) 423-5505
Fax: (406) 423-5617
e-mail: cynthia@bigsky.dillon.mt.us

NCCE–Northwest Council for Computers in Education

Conference conducted annually for three days in the Spring, at various sites in Oregon and Washington; 1996 conference is in Portland. Sessions and workshops focus on instructional applications of computers and related devices, and on computer-based telecommunications.

Myrna Jensen, Conference Coordinator
NCCE
324 Whitebirch Place
Wenatchee, WA 98801

Curricular Cross-reference

For assistance in planning the role of distance education and telecommunications options in the curriculum, this list groups the various service options according to whether they purport to offer complete instruction as in a full course, or material and activities which are intended to be supplementary to the regular curriculum, enriching or extending the experiences of students.

Full Courses or Inservice

Course Name	Page
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ASTS	12
EDUNET	20
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IREDS SatNet	5
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MCET	6
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PLANNING AND DECISION MAKING

As in any instructional program in a school district, a decision to use distance education has implications for a number of areas of concern to administrators and teachers, described briefly here.

Staff

In all distance education programs, the student is separated from the primary instructor, which usually generates a need for some attention from staff at the student's location. Consideration should be given to the following areas.

Tasks—a staff member, either a professional or an aide, should be responsible for the direct supervision of students. The person is usually identified as a facilitator or monitor. When an aide is used, a certified staff member is sometimes identified as responsible for grading and credit. Some states have laws or administrative rules which require teacher certification or a special training course for aides. Some providers of distance education courses prescribe the role of a facilitator for a receiving site in their system. The following task areas are common to most situations.

Prepare equipment and supplies
Perform recordkeeping
Maintain discipline
Provide feedback to the instructor
Serve as liaison with the delivering agency
Monitor homework
Administer tests
Provide understanding and support to students

Time—Even though not involved in presenting information, the local staff members need time to carry out the local tasks. Also, in the satellite courses, the originating teacher conducts television sessions three or four days each week, leaving one or two days for specified local activities for which some preparation may be needed.

Training—Two types of training should be considered. First, the facilitator should receive training for the tasks of the position, usually provided by the distance education delivery agency either on site or by telecommunications. Second, the success of a distance program also depends on the support and good will of the rest of the teachers in the receiving school. An inservice program to educate the staff about the nature of the distance program and its implications for students and staff is an important component of preparation to achieve that support.

Environment

Several components of the receiving site need attention.

Space—Adequate room is needed for the number of students and equipment involved, with controllable light for desk work and television viewing.

Power—Enough electrical outlets are needed for the devices required for a receiving station, which might include TV, VCR, computer, printer, FAX, etc.

Telecommunications—In most systems, a direct phone line is required which does not pass through a switchboard where a call may be interrupted by an operator or other voice user. The ability to run cable to the room from an outside antenna is needed in television systems.

Back-up—To assure a cohesive instructional session with minimum interruption, it is important to identify back-up units in nearby rooms for the various technical components which could fail, including TV, computer, VCR, etc. Back-up videotapes and computer software should also be on hand.

Security—Depending on the climate and experience in a specific school, some consideration might be given to providing a locked space for containing the equipment when not in use.

Noise—The sound from television programming, like that of films, could be a problem for other nearby instructional spaces. Also, in some systems, students will be talking on the phone. The same consideration for noise should be given as in a regular classroom.

Support

Depending on the type of system in use, there may be other considerations for which advance planning and budgeting is important.

Maintenance—Computers and printers need occasional maintenance attention, and so do television monitors and other video equipment, although usually not as often. Identifying the closest local option and providing a budget to cover problems will reduce the potential down time in case of component failure.

Supplies—Printer paper, videotapes, and other supplies may be needed for the room. In some cases, instructional materials need to be purchased. If a variety of services are expected to be used, a subscription to a suitable program guide could be useful.

Travel—Some distance delivery organizations provide options for remote students to be part of a studio class. Part of the training of facilitators sometimes takes place in the originating site. Conferences are available to enrich staff understanding. Consideration should be given to a budget to take advantage of such opportunities.

Budget

As is evident from the system descriptions in previous sections, a wide variety of fee structures is employed by the vendors of distance education courses and services. Some charge for items which others do not, and some have memberships while others do not. It is difficult to compare two systems which offer the same course or similar service but have different fee structures without working out an actual example of each. Some organizations such as Ed-Net in Oregon require a commitment for longer than a year.

The form on the next page is provided as a guide for obtaining a general total of costs from a single service, so that the net result of applying two different fee structures can be compared. It is designed to be generally applicable to a range of different options, and, therefore, might contain some items which don't apply in some cases. It is also designed to be a reminder of some factors which result in costs to the district but which are not typically included in vendor fee structures, so that the total cost of a plan is revealed.

The cost of some items such as phone lines and staff vary from one locale to another, even within a state, and will have to be obtained locally. We are unable to provide accurate figures for the region as a whole. The reader may find it necessary to add items to the form to suit local conditions and factors.

Distance Education
Cost Planning Worksheet

Delivering Organization:_____

Membership Fee $_____

Course Fees:

Title 1 _____ _____ Stu. x $_____ = _____

Title 2 _____ _____ Stu. x _____ = _____

Title 3 _____ _____ Stu. x _____ = _____

Inservice Courses _____ Teachers x _____ = _____

Instructional Materials: Purchase and duplication _____

Equipment:

Satellite Antenna _____

Satellite Tuner _____

Classroom TV, VCR, etc. _____

Computer, peripherals and software
(some courses may require several) _____

Phone Line:

Installation _____

Monthly Line Charge _____

Long Distance Charges _____

Maintenance and Replacement _____

Facilitator/Monitor _____

Travel, Conference _____

TOTAL $_____

EVALUATION

Educators planning to use distance education as a part of the school curriculum are faced with choices among delivery systems and among courses in the same subject from different systems. In some states, policy in law or administrative rules requires local districts to evaluate courses prior to selection or during use. Also, teachers and other district staff may be involved in the development of instruction to be delivered by distance technologies.

The guidelines in this document are intended to support all of those purposes. They have been assembled by the Technology and Rural Education Programs of the Northwest Regional Educational Laboratory from a number of documents which present instructional design and evaluation criteria, and from their on-site assessment of the effectiveness of selected courses from the EDUNET and STEP distance education systems in the northwest region. These guidelines are a starting point, and will be reviewed periodically to incorporate modifications occasioned by use and research. References for further information are available from the Technology Program.

Objectives

Learning objectives are expressed which:

- are clearly stated in terms of learner outcomes (knowledge, skills, attitudes)
- include higher-order thinking skills and the affective domain
- are written from the student's point of view
- have a consistent scope (are relatively equal in amount of material or work to cover)
- imply or state an appropriate level of difficulty
- are written with a performance measure in mind

Content

Concepts are organized in a logical manner.

Content is comparable to that of a traditional classroom course.

The information is developmentally appropriate for age or grade.

The information is current and accurate.

Content corresponds to the objectives established.

The scope is appropriate, and the coverage is comprehensive within those bounds.

Content is free-standing, requiring little if any outside resources or information.

Instructional Design

Teaching strategies include all modalities: Visual, auditory, tactile.

Strategies reflect effective teaching research: frequent review, guided practice, extensions (enrichment), and correctives (reteaching).

Attention is given to learning styles of the target age group.

Lesson or unit size is appropriate for self-directed learning.

Lessons or units are arranged in a logical sequence.

A suggested pace of progress appropriate to the target audience is included.

Optional learning activities are included for use after criterion test failure or at other appropriate points.

Learner interaction with content is encouraged:

- Challenging questions are posed
- Written assignments are required
- Critical viewing, reading, and thinking are stimulated

Instructional Materials

Materials are selected to address different learning modalities: visual, auditory, and tactile.

A variety of instructional materials are used: print, computer software, audiotape, videotape.

The purpose of the materials and their relation to objectives are clear.

Materials are identified or provided to support options for enrichment and remediation.

Materials are identified or provided to support frequent review and guided practice.

Print materials have an appropriate vocabulary and reading level.

Recommended and provided materials are consistent with state and local standards and selections.

Evaluation

Formative tests are administered frequently.

Summative tests are presented at appropriate points.

Tests are related to instructional objectives.

Practice tests for self-assessment are available in paper form.

Grading standards are clear and fair.

Facilitator Guidelines

A set of guidelines are provided which will assist the school course facilitator in providing effective student support and guidance. The following items should be included:

- Responsibilities of the facilitator
- Learning objectives
- Content outline for the entire course or unit
- Prerequisites expected of students
- Expectations for pacing and completion time
- Optional instructional approaches, materials and activities
- Teacher contact information, including times available
- Grading approach, philosophy, and local options
- Special requirements for equipment and facilities

GLOSSARY OF TERMS

ASCII—A standard code for the transmission of alphabetic, numeric, and other characters in computers and telecommunications systems. (American Standard Code for Information Interchange)

Amplifier—A device used in telecommunications systems to restore to its original level a signal which has deteriorated over a distance.

Antenna—In a satellite system, the receiving antenna is a disk shaped with a parabolic curve. A standard antenna for C-band has a diameter of about three meters, and a Ku band signal requires a diameter of one to two meters.

Audiographic—A system which transmits both an audio signal and computer graphics on the same telephone cable. Equipment includes a computer, graphics tablet, and speaker-phone at delivering and receiving ends, and some additional communications devices. A television signal is not part of the system.

Band Width—The size of a telecommunications band in cycles or bits per second which defines the capacity of a medium such as copper wire or fiber optic cable to carry signals. The larger the band width, the greater the number of signals which can be transmitted simultaneously, or the greater the amount of information which can be sent at one time. Video signals require greater band width than audio because there is more information in a picture.

Baud—Baudot code, a scale for expressing the rate of transmission of information in defined sets. For example, 1200 baud is 1200 bits per second, where one bit is one set of information.

Bit—One binary digit, expressed numerically as a 0 or 1, or as a brief change in signal intensity on a telecommunications line.

C-Band—A band of telecommunications frequencies reserved for satellite transmission (3700-4200 MHz from satellite to earth). This band requires a larger receiving dish antenna than Ku band, is less prone to signal loss in rain or snow, and is more prone to microwave interference.

Channel—A basic unit of service in a telecommunications system, usually a narrow bandwidth such as 6 MHz for a television channel.

Coaxial—A cable having a copper-clad aluminum core with insulation to minimize loss of signal and interference. It can handle higher frequencies for longer distances than twisted pair.

Codec—Coder-decoder, a device for changing a video signal from analog to digital or the reverse, as the signal passes between a transmission device and cable or other medium. The purpose is similar to that of a modem in an audio signal.

Converter—A device that translates nonstandard frequencies between channels 6 and 7 and above channel 13 to an unused VHF channel, extending the channel capacity of a cable system.

Direct Broadcast Satellite (DBS)—A satellite equipped to transmit a strong signal in a concentrated beam, which enables a school or other location to receive signals with a relatively small dish antenna.

Downlink—A receiving station for a satellite signal, usually a parabolic dish antenna and other equipment to carry the signal to a television set.

Downstream—Cable signals traveling from the headend to the subscriber or receiving site.

Fiber Optic—A type of cable made of many glass fibers, each of which carries a signal generated by a light source such as a laser. The light flashes on and off, creating a combination of bits. It has much greater capacity than coaxial or twisted pair.

Footprint—The area on earth within range of a satellite-transmitted signal.

Headend—The master control center of a cable system, which distributes the signals from the satellite antenna or other source to the cable users.

Ku Band—A band of telecommunications frequencies reserved for satellite transmission (11700-12200 MHz from satellite to earth). This band requires a smaller dish antenna than C-band, is more prone to signal loss from rain or snow, and is less prone to terrestrial microwave interference.

MHz—Megahertz. Hertz (Hz) is the name of a unit of measure of a signal in cycles or waves per second. One MHz is one million waves per second. One GHz is one billion waves per second. A human ear typically operates in the range from about 16 Hz to 16 Kilohertz (KHz), or 16 to 16,000 waves per second.

Modem—Modulator-demodulator, a device used to change a computer-generated signal to an audio signal which can be carried on a telephone line, or the reverse.

MSO—Multiple System Operator, a company or organization owning several cable delivery systems.

Narrowcasting—Television programming designed for a specific target audience.

Polarization—A technique to increase the capacity of satellite transmitters. In linear polarization, half the signals are generated horizontally and half vertically, with no interference resulting.

Slow Scan—A form of television in which an image is scanned and transmitted only once every minute or so instead of many times a second as in a regular television broadcast. The receiver sees an image change slowly, as in viewing a series of slides. The advantage is that the signal can be transmitted inexpensively over telephone lines.

Teletext—Distribution of textual data by broadcast television, in the vertical blanking interval.

Transponder—The receiver/transmitter combination within a satellite, which receives the signal from an uplink, amplifies it, and retransmits it to a downlink. There are many transponders in one satellite, each representing one video channel.

Tuner—Part of the receiving apparatus in a downlink site to focus on the signal.

Twisted Pair—The term used to describe the common telephone cable, composed of two copper wires twisted to form a cable for one phone line, with many pairs combined in a large cable to serve more phones.

Uplink—A station for transmitting a signal to a satellite, sometimes called an earth station. It includes a parabolic dish antenna and other related equipment.

Upstream—Cable signals traveling from a subscriber site to the headend.

Vertical Blanking Interval—A portion of a standard broadcast band or channel, which is unused by the television signal, and available to carry other information.

Videotex—Distribution of textual data by a cable system.

VSAT—Very Small Aperture Terminal, a receiving antenna of about one meter in diameter.